CAROTID ANGIOGRAPHY WITH UROKON,* USING THE CHAMBERLAIN BI-PLANE STEREOSCOPIC ANGIOGRAPHIC UNIT

REPORT OF ONE HUNDRED CASES

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Since the introduction of cerebral angiography by Moniz,17 various complications from contrast media have been reported. The percentage varied from 2 per cent to 15 per cent and the degree from skin rash to hematoma of the neck, convulsions, increased neurological deficit, sarcoma and fatality.1,2,8-11,14-16,20,22 It is apparent that to decrease these reactions one must reduce the amount of the medium injected and select a substance least irritating to the vascular system. It is also desirable that the procedure be done under local anesthesia. We have attempted to approach these requirements.

In 1951 Chamberlain6,7 devised his bi-plane stereoscopic angiographic unit using two Fairchild rapid-sequence roll-film cassettes. This apparatus takes 12 stereoscopic exposures in both anteroposterior and lateral views in a period of 8.4 seconds, giving a total of 24 frames using only one injection of the contrast medium (Fig. 1). We found that 8–10 cc. of any medium gave adequate filling of the carotid system, both in arterial and venous phases. The reproduction of the vascular system in all phases is equal to that in cerebral angiograms taken by other x-ray units (Fig. 2). Since this apparatus takes serial pictures

* Urokon Sodium is the sodium salt of 3-acetylamino-2,4,6 triiodobenzoic acid, an organic iodine (65.8% iodine) compound (pH 7 to 7.4) in 30% aqueous solution, manufactured by Mallinckrodt Chemical Company.
FIG. 2. Normal angiogram with Urokon using the stereoscopic unit. Three characteristic phases were selected from a total of 12 lateral and 12 anteroposterior films obtained from a single injection of 8 cc. in one patient. (A) Arterial phase. (B) Arterial venous phase. (C) Venous phase.

at intervals of seven-tenths of a second, one can determine the cerebral circulation time in its various phases from the angiograms.

Thorotrast has been considered the least irritating of the contrast media. However, its sarcogenic properties are well known. At present, Diodrast (Perabrodil) is widely used in this and foreign countries but it is considered to be irritating. We have had no experience with Neo-iopax; however, complications from its use have been reported.

This report is based on the use of Urokon Sodium (a relatively new contrast medium) in 100 consecutive cases of cerebral angiography, using the bi-plane stereoscopic angiographic unit. Nesbit and Lapides consider Urokon preferable to Diodrast in urography. Seaman and Schwartz have used 30 per cent Urokon Sodium for cerebral angiography in 36 patients. They reported minor reactions in 7 patients (17.5 per cent), and major reactions in 3 patients (7.5 per cent). However they stated, "A causal relationship to the administration of Urokon is extremely doubtful in the latter group."

"The visible flush of the skin, momentary muscular stiffening and transient pupillary dilatation that invariably accompanied the intra-arterial injection of other radio-opaque materials were absent when Urokon was used."

They concluded that Urokon was a promising radio-opaque medium and warranted further extensive clinical trials.

The manufacturers of Urokon stated that Gass has used the material